SUMMARY AND CONCLUSION

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In this work we evaluate PCT serum level as a marker of sepsis in preterm infants. The study was carried out on (50) neonate from Neonatal Intensive Care Unit (N.I.C.U) of Mansoura University Hospitals from the period of March 2007 to March 2008:

They were subdivided into 3 subgroups:

- **Group I:** Composed of (20) premature with culture – proven sepsis and definite clinical signs of sepsis and positive other laboratory studies. With gestational age (31.6± 2.99ws) and birth weight (1630.3 ± 500.9 gms).
- **Group II:** Composed of (20) premature with definite clinical signs of sepsis with negative blood culture. With gestational age (31±2.82ws) and birth weight (1513.5± 580.89gms).
- **Group III:** Composed of (10) premature admitted only for prematurity served as a control group. With gestational age (31.2± 1.75ws) and birth weight (1400.3± 413.29gms)

They were preterm neonates with postnatal age (7.1± 3.3 days), (6.1± 2.07 days) and (6.7 ± 2.5 days) for septic group I, septic group II and control group respectively.

Both septic and control groups were subjected to full history taking, thorough clinical examination and laboratory investigations including CBC with differential, CRP, blood culture and sensitivity and measurement of PCT by rapid PCT- Q test (a new test for rapid (30 min), semi- quantitative measurement of procalcitonin, using a monoclonal

mouse anti- catacalcin antibody conjugated with colloidal gold (tracer) and a polyclonal sheep anticalcitonin antibody (solid phase).On applying the patient serum to the test strip, the tracer binds to the PCT in the sample and marked antigen antibody complex forms).

Results of blood cultures in the septic group I showed that 50% (10/20) were caused by Staph, 25% (5/20) were caused by Klebsiella, 15% (3/20) were caused by Enterobacter, and 10%(2/20) were caused by E coli.

Our study revealed statistically significant increase regarding TLC and bandaemia %in the septic groups I and II compared to the control group ($p<0.05$).

A statistically significant decrease regarding platelet count & Hb% was observed in the septic groups compared to that of the control group ($p<0.05$).

Procalcitonin (PCT) was statistically significantly elevated in the septic group I (3.15± 0.75 ng/ml) and the septic group II (3.25 ± 0.64 ng/ml) compared to the control group (0.49 ± 0.01 ng/ml) ($P < 0.01$).

Laboratory data including (Hb level, TLC, bandaemia %, and platelet count) showed no statistically significant correlation with PCT level among septic groups (I and II).

PCT-Q test sensitivity (97.5%) specificity (90%), positive predictive value (ppv) (97.5%) and negative predictive value (npv) (90%) and CRP sensitivity (92.5%) specificity (80%), positive predictive value (ppv) (92.5%) and negative predictive value (npv) (80%). When both PCT-Q test and CRP used together the sensitivity decreased to (90%) and negative predictive value (NPV) decreased to (71.4%) but specificity and positive predictive value (PPV) increased to (100%).

In this study, PCT median level non survivors septic neonate (8.26±1.85ng/ml) was statistically significant higher than that of survivors septic neonates (5.12±2.12ng/ml) with ($P< 0.05$).

Our final conclusion is that:.

-PCT is more reliable marker of neonatal sepsis versus other parameters of sepsis such as total leukocytic count, bandaemia count and CRP. The procalcitonin (PCT) sensitivity, specificity, negative predictive value and positive predictive value were greater than those of CRP (97% vs 92%, 90% vs 80%, 90% vs 80% and 97% vs 92% respectively).

-It is also a quick diagnostic parameters (available within 30-45 minute with using the new rapid PCT-Q test) of neonatal sepsis by comparison to blood culture.

-It is better for accurate diagnosis of sepsis to use both CRP and PCT-Q test together at a cut-off level > 10 mg/L and > 0.5ng/mL respectively.

-Even with blood culture negative in septic group II, with presence of clinical signs of sepsis, positive sepsis score and combined levels of CPR >10 mg/l and PCT >0.5 ng/ml, those neonates can be considered as septic cases and antibiotics therapy should be started.

-PCT has a prognostic value as it is significantly higher in septic non-survivor neonates during this study versus survivor neonates.